

### Claim Listing

The claims below replace all pending claims in the application

76. (currently amended) An array of several different particle-attached ligands, wherein different ligands are attached to different particles and said particles have a chemical or physical characteristic that permits identification of the ligand or ligands attached thereto, and wherein said particles are ~~arranged on a substrate~~ in a planar, ~~defined configuration~~ ~~in or in a~~ defined area on the surface of a substrate and wherein said particles are affixed to said substrate.

77. (previously presented) The array of claim 76 wherein the particles are affixed to the surface of the substrate.

78. (previously presented) The array of claim 76 wherein the ligands are proteins.

79. (previously presented) The array of claim 76 wherein the ligands are nucleic acids.

80. (previously presented) The array of claim 76 wherein, within the planar configuration, the particles are randomly positioned.

81. (currently amended) An array of proteins according to claim ~~77~~, 78 wherein different proteins bind to ~~ea~~ different cell types.

82. (currently amended) The array of proteins according to claim ~~77~~, 78, wherein the proteins are monoclonal antibodies.

83. (currently amended) An array of oligonucleotides according to claim ~~77~~, 79 wherein the nucleic acids are DNA or RNA.

84. (previously presented) The array according to claim 76, wherein the substrate is a semiconductor.

85. (currently amended) The array of according to claim 76, 84 wherein the substrate is an electrode.
86. (previously presented) The array according to claim 76, wherein the chemical or physical characteristic is a chemical tag.
87. (currently amended) The array according to claim 84, 86 wherein the chemical tag is capable of being interrogated optically.
88. (previously presented) The array according to claim 77, wherein the particles are affixed to the substrate by chemical bonding.
89. (previously presented) The array according to claim 76, wherein the particles are exposed to liquid containing or suspected of containing an analyte.
90. (previously presented) The array according to claim 89, wherein the ligands are nucleic acids capable of hybridizing with one or more analytes contained within the liquid.
91. (previously presented) An article of manufacture comprising two or more of any of the arrays defined in claim 76 to 90.
92. (previously presented) The article of claim 91 wherein the location of each array on said substrate in combination with the chemical or physical characteristic indicates the types of ligands therein.
93. (currently amended) A method of forming a plurality of arrays, comprising the following steps:  
providing a multiplicity of reservoirs arranged in a predetermined layout, wherein each of said reservoirs has a known position within the layout and contains a suspension of a plurality of different particles having a different ligands attached

thereto, and each of said particles being encoded with a chemical or physical characteristic that identifies said particle type and ligand attached thereto, and wherein the known positions of the reservoirs in combination with the encoding within the layout indicate the types of particles contained therein; and transferring said suspensions of particles from the reservoirs onto a substrate in a layout-preserving manner and forming a multiplicity of planar particle arrays on said substrate, such that the particle types of each particle array are identical to the particle types of the corresponding reservoir and the position of each of the particle arrays on said substrate correlates with the position of the corresponding reservoir.

94. (previously presented) The method of claim 93 wherein the ligands are nucleic acids or proteins.

95. (previously presented) The method of claim 93 wherein the chemical or physical characteristic is a chemical tag.

96. (previously presented) The method of claim 95, wherein the chemical tag is capable of being interrogated optically.

97. (previously presented) The method of claim 93 wherein the substrate is silicon.

98. (previously presented) A method of multiplexed assaying for analytes capable of binding to an array of ligands, comprising:

providing an array of several different ligands, wherein different ligands are attached to different particles and said particles are encoded with a chemical or physical characteristic that identifies the ligand attached thereto,

arranging said particles on the substrate in a planar, defined configuration;

contacting said particles with a fluid sample containing the analytes, resulting in the particles residing in a contiguous liquid phase;

determining binding of the ligands to the analytes; and

decoding by determining the chemical or physical characteristics of particular particles, and hence of the attached ligands which bind to analytes in the sample.

99. (previously presented) The method of claim 98 wherein the particles are affixed to said substrate;

100. (previously presented) The method of claim 98 wherein the ligands are proteins or nucleic acids.

101. (previously presented) The method of claim 98 wherein the proteins are monoclonal antibodies.

102. (previously presented) The method of claim 98 wherein the ligands are proteins and each different protein binds to a different cell type.

103. (previously presented) The method of claim 100 wherein the nucleic acids are DNA or RNA.

104. (previously presented) The method of claim 101 wherein the characteristic is a fluorescent tag which can be detected using a microscope.

105. (previously presented) The method of claim 100 wherein the determining of binding is accomplished by using a detection antibody which binds to the ligand-protein complex.

106. (previously presented) The method of claim 105 wherein the detection antibody is fluorescence labeled.

107. (previously presented) The method of claim 98 wherein determination of binding is accomplished by recording an optical signature indicating binding of the ligands and analytes.

108. (previously presented) The method of claim 107 wherein the optical signature is a fluorescence signal.

109. (currently amended) A method of performing a protein assay using at least one array of particles, comprising:

providing a planar array wherein a plurality of types particles are arranged on a substrate in a defined configuration, and wherein said particle types are differentiated by the protein molecule attached thereto and are encoded with a chemical or physical characteristic that identifies said particle type and protein attached thereto;

contacting said array of particles with a solution that may contain one or more types of analytes such that the particles are in a contiguous liquid phase and, if the analytes are present in said solution, said analytes form paired entities with the corresponding proteins of said particles;

detecting said paired entities; and

identifying said chemical or physical characteristics of each particle type.

110. (currently amended) The method of claim 109 wherein the particles permanently anchored affixed to said substrate.

111. (currently amended) The method of claim 109 wherein as a result of the contacting step, the chemical or physical characteristic the particles are in a contiguous liquid phase in the solution is color.

112. (previously presented) The method of claim 109 wherein the chemical or physical characteristic can be optically interrogated.

103. (previously presented) The method of claim 111 wherein all particles and their respective attached protein molecules in the array are exposed to the same aliquot of solution.

Respectfully Submitted,

BY: 

Eric P. Mirabel  
Reg. No. 31,211  
Bioarray Solutions, Ltd.  
35 Technology Drive  
Warren NJ 07059  
(908) 226 8200 (ext 203)

Applicant(s) hereby petitions for any extension of time or for any other grounds needed to make this submission timely and proper. The Commissioner is hereby authorized to charge any fees due in connection with this submission and not otherwise covered by payment included herewith, or to credit any overpayment, to Deposit Account No. 502088.